

Response to NNSA request for Information in follow-up to the DNFSB Electrical Safety review. (updated 11/8/01)

Reference DNFSB letter (and attachment) 06/21/01

The DNFSB Electrical Safety review of BWXT Y-12, conducted in 2000, used the DOE Electrical Safety Handbook as a reference document. Although the DOE Electrical Safety Handbook is not contractually required for the Y-12 Complex, the handbook was used as a guidance document for the establishment of the electrical safety program and implementing management requirements (procedures) at BWXT Y-12, including the establishment of the Electrical Safety Committee, and the AHJ. The DNFSB Report identified three issues; Electrical Safety During Excavation; Authority Having Jurisdiction (AHJ) and identification of non-listed and non-compliant equipment; and the Electrical Safety Committee.

Electrical Safety During Excavation

The DNFSB identified several issues regarding excavation safety during their visit to Y-12. The excavation safety program for the plant required the review of as-built drawings to determine possible underground utilities, but the use of detection equipment was optional. In addition, the radar equipment that the plant used for detection was considered outdated technology.

Since the Defense Board visit, BWXT Y-12 has implemented the following changes:

A team was established in July, 2001 to review DOE Notice 96-06 and the Y-12 procedures for excavation safety. The team is comprised of members from the Engineering, Safety, Quality, Maintenance, Utilities, and Construction Organizations. The document review of the excavation safety procedures has been completed and concerns and issues with the current process have been identified. The team is currently making revisions to streamline the permitting process and incorporate requirements for the use of detection devices into the procedures.

Until the procedures are revised, the Manager of the Electrical Engineering Design Organization is required to review all excavation permits to ensure that the appropriate use of detection devices for field locating is conducted prior to excavation.

BWXT Y-12 (Engineering Organization) has purchased several new pieces of equipment, which are now being used for locating underground utilities on excavation work. This equipment includes a Ditch Witch 75T (frequency transmitter) and two Ditch Witch 75R's (frequency receiver) for locating buried telephone, power, CATV, gas, sewer and water lines. The ground penetrating radar system has been upgraded with the purchase of a new digital control unit and a new antenna. In addition, a new electronic distance meter was purchased for improved surveying, and a re-bar locator has been transferred to the Engineering Organization from the construction contractor.

AHJ Issue

During its review at LLNL, SRS and Y-12, the DNFSB observed that, although the contractors had an established AHJ program, no structured effort had been made to identify non-listed and non-compliant electrical equipment that failed to meet the acceptance criteria set forth in the DOE Electrical Safety Handbook. The board cited the fact that a preliminary review of 20 facilities at Pantex identified "more than 506" instances of non-compliant or non-listed

equipment.

The AHJ (for the National Electrical Code) position at BWXT Y-12 resides in the Maintenance Organization. This person is responsible for interpreting codes, standards, and regulations; inspecting and approving electrical equipment installations; and inspecting and approving non-listed / labeled equipment. The AHJ utilizes support from the Electrical Safety Committee and the Electrical Engineering Organization as needed. These roles and responsibilities are identified in the BWXT Y-12 Electrical Safety program document, which was revised in April 2001.

Regarding the DNFSB concern that DOE sites do not have a structured program for identifying existing non-compliant or non-listed electrical equipment:

Equipment installed in compliance with a code or standard in effect at the time of installation may not be in compliance with the current codes/standards.

The current BWXT Y-12 Electrical Safety procedure requires that all equipment purchased is to be approved by an Nationally Recognized Testing Laboratory (NRTL) if available, or by the plant AHJ. The plant's contract with the approved Electrical Equipment vendor requires that all equipment supplied is to be NRTL approved. The procedure also requires an AHJ inspection of all new electrical installations or modifications.

At this time, the plant has not undertaken a project to review / inspect all existing electrical equipment and installations to 1) identify non-compliant and non-listed equipment, 2) have the AHJ inspect and approve all non-listed equipment found, and 3) upgrade all non-compliant equipment to meet the current code (or to research when the equipment was installed to determine whether it was installed in accordance with the codes/standards in effect at the time). However, the Electrical Safety Committee is currently reviewing the non-listed / non-compliant equipment issue. The committee will develop options and recommendations that will be provided to Senior Management to review for determination of future actions.

When an electrical incident occurs at the plant, an investigation is conducted in accordance with plant requirements to determine the cause and appropriate corrective actions. This includes a review for determination of potential plant-wide trends and necessary corrective actions.

Electrical Safety Committee

The Board observed that the Electrical Safety Committees at the facilities they reviewed are primarily involved in the development of procedures and safety manuals, and not performing all the duties and responsibilities identified in the DOE Electrical Safety Handbook.

The responsibilities for the Electrical Safety Committee (ESC) identified in the DOE handbook are not performed solely by the BWXT Y-12 Electrical Safety Committee. Although the committee performs many of these tasks, the tasks in the handbook are divided between the Committee, the Safety Department, the Electrical Engineering Organization and the AHJ.

- The ESC is responsible for developing procedures, recommending and developing training, advising management of the need for funding to support electrical safety initiatives, assisting in electrical incident investigations, and communicating alerts and bulletins.
- The Safety Department establishes the ESC, assigns the Chairperson and is responsible for

the Committee charter.

- The Electrical Engineering Department is responsible for ensuring that new and modified electrical installations are designed in accordance with applicable codes and standards, and requiring AHJ approval for equipment designs when NRTL approved equipment is not available.
- The AHJ is responsible for interpretation of codes and standards, inspection and approval of new and modified electrical installations, and inspection and approval of equipment that is not NRTL approved.

The specific roles and responsibilities for each of these entities as they relate to the plant's electrical safety program are documented in the BWXT Y-12 Electrical Safety program document, which was issued in April 2001. This program document was written by the Electrical Safety Committee, which is made up of members from the Maintenance, Electrical Engineering, Power Operations, Safety, and Training Organizations, the Electrical workers union, and the plant AHJ. The new procedure clarifies the requirements for each of these groups, and Line Organizations who own electrical equipment, and replaces four existing procedures. The Committee Charter was updated in September 2001, to reflect the requirements of the new procedure.